	A	B	C	D	E	F	G	H
1	**Project Number**	**Topic**	**Project Name**	**Description**	**Potential Countries**	**Analysis Type**	**Expected Policy Products or Recommendations**	**Existing PREDICT Data**
2	1	Medium and large market value chains	**Upstream vs. local viral diversity**	Compare viral detection rates of species in markets to the same species at their sources	Bangladesh, CIV, Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Data Modeling	Recommendations whether to focus on upstream or in-market interventions to reduce spillover	PREDICT-1 viral detection data
3	2	Medium and large market value chains	**Assessing viral sharing within market species**	Within common or nearby markets, determining which species share viruses in order to recommend separation. Determine viral sharing both within specific markets, and for all PREDICT-1 (and other) data for species found in the same market	Cameroon, DRC, Lao PDR, ROC, Vietnam	Data Modeling	Recommendations for species segregation to reduce spread,	PREDICT-1 viral detection data from markets PREDICT-1 and PREDICT-2 species presence in markets
4	3	Medium and large market value chains	**Converting live markets to non-live**	Estimating reductions in viral density/diversity as a result of change from live to non-live markets. Compare estimated viral diversity and density in a live market to an equivalent non-live market or live market with fraction of time, volume, or species converted to non-live.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Mixed Data Modeling/Scenario Creation	Expected degree of risk change from full conversion of markets, Expected efficacy of partial conversions and closures Identification of markets with potential for conversion	PREDICT-1 viral detection data from live and non-live samples in markets
5	4	Medium and large market value chains	**Reducing market biodiversity**	Estimating potential for viral recombination in markets based on species diversity and count using previously created recombination model.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Mixed Data Modeling/Scenario Creation	Identification and ranking of markets with high recombination risk, recommendations for species segregation for those markets	PREDICT-2 Species and number of animals (live) in markets (Site and Event characterization - Main Q15)
6	5	Medium and large market value chains	**Will policies for market-based interventions be accepted?**	The intevention policy ideas that we are generating above, and others, may not be acceptable to governments or people within countries. This project will assess their likelihood of becoming government policy, or being adopted by people.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam, Ghana, Liberia, Tanzania	Mixed Data Modeling	Recommendations that are more likely to be adopted	PREDICT-1 and PREDICT-2 behavioral risk data
7	6	Bat Hunting and hunted meat value chain	**Hunter Behavioral Risk Hotspots**	Identify areas with highest risk of viral spillover to hunters based on risky behavior, propensity of local bat species to carry viruses, and likelihood for bats to be sold into value chain	Bangladesh, China, DRC, Ghana, Indonesia, Nepal, RoC, Sierra Leone, Cambodia, Liberia	Data Modeling	Target locations and behaviors for educational interventions	PREDICT-2 questionaire data on hunter behavior
8	7	Bat Hunting and hunted meat value chain	**Bat Hunting Seasonality**	Identify areas of bat hunting associated with high risk seasonality in bat viral detection	Bangladesh, China, DRC, Ghana, Indonesia, Nepal, RoC, Sierra Leone, Cambodia	Data modeling	Target locations and seasons to reduce bat hunting/drive education	PREDICT-2 questionaire data on hunter behavior PREDICT-1 viral detections
9	8	Ecotourism/recreational/religious exposure to bat caves	**Bat cave biodiversity risk**	Estimating potential for recombination of viruses in bat-dwelling caves	China, Egypt, Myanmar, Rwanda, Uganda, Senegal, Kenya, Cambodia	Mixed Data Modeling/Scenario Creation	Risk characterization by cave site/size/type	

All projects (n=16)

	I	J	K	L	M	N	O	P
1	**Other Existing Data Assets**	**Non-field Data Collection**	**Additional Field Data Collection**	**Time Frame (3 mo, 6 mo, 1 yr)**	**Probability of Success (Low, Med High)**	**Action items**	**Point person**	**Collaborators**
2			Market-upstream site associations from field teams	Short		Determine what P1 cases have same species in both markets and linked upstream sources	KJO	Evan, CKJ, Tracey, LVF, KS
3	HP3 viral associations		More accurate species characterization and counts in identified markets of interest	Long		Estimate data on species diversity and numbers from P2 site characterizations in market modules	CKJ	KJO, Anna W.
4		Literature review of viral survival at EHA (collected but not analyzed)		Short		Determine which countries are we sampling from dead animals in non-live markets. Can we identify comparable live and non-live markets?	CKJ	Lucy K (SE Asia Markets), LVF, KS
5			More accurate species characterization and counts in identified markets of interest	Long		Building on Parviez' model: Estimate data on species diversity and numbers from P2 site characterizations in market modules	CKJ	NR, Shirley Chen, KJO, CKJ, Sarah Olson, Brian Bird, Tracey
6	Surveys of current policies within country, literature review		Targeted qualitative data and focus groups. Interviews with Govt. agencies.	Long			LVF, Saba Qasmieh	Karen Saylors, Hongying Li, DJW
7	IUCN species ranges, HP3 viral risk propensities		Country team estimation of exact bat species being hunted	Med		Pull survey data to determine locations with hunters, what species hunted and hunting behaviors engaged in	Stephanie Martinez	LVF, CKJ, KJO, Anna Willoughby, Terra, Brian, Guinea
8	IUCN species ranges		Country team estimation of exact bat species being hunted	Med		Pull survey data to determine locations with hunters, what species hunted and hunting behaviors engaged in, determine whether these hunters hunt with Pteropus or Eidelon (seasonal bat species)	JKM (to discuss with Evan and Stephanie regarding overlap with hunter behavioral risk above)	KJO, CKJ, Nistara, Diego, PD, JAKM
9	HP3 and Cave bat viral sharing analysis	Find literature-based bat-specific viral sharing/recombination rates	Cave bat species diversity and composition and multiple cave sites	Long		Identify cave sites with potential for measurement and develop sampling plan	Anna W.	KJO; Brian Bird; Kirste & Julius; Simon/Tracey

All projects (n=16)

	Q
1	**comments**
2	Existing data not likely super useful; KJO to work closely with CKJ on this given pverlap with other market projects
3	need to discuss bar coding
4	Existing data not likely super useful
5	CKJ to discuss plan with Shirley and Noam
6	
7	
8	What about dog/bat hunting in Lake Zone?; Add lab people if viral finding-dependednt
9	We havE MURONGO cave as well in TZ;

	A	B	C	D	E	F	G	H
10	9	Ecotourism/recreational/religious exposure to bat caves	**Bat-tourist interaction**	Survey bat caves associated with predict to estimate tourist flow and demographics, current safety measures, contact risk. Estimate reduction of risk with limitation on visitors / safety measures.	China, Malaysia, Myanmar, Rwanda, Uganda, Thailand, Nepal, Jordan, Egypt, Indonesia, Cameroon, Laos, Senegal, Kenya, Tanzania	Scenario Creation	Target caves and safety measures by cave	
11	10	Bat-community Interactions (including livestock)	**SADS outbreak modeling - China**	Developing and fitting model of SADS disease dynamics on chinese pig farms based on previous outbreak data	China	Scenario Creation	Recommendations for intervention in new SADS outbreaks	PREDICT-2 virus identification
12	11	Bat-community Interactions (including livestock)	**Bat-pig contact risk of new EIDs**	Identifying the likely mechanism for contact between SADS host bats and pigs to assess if this could be generalizable to other countries and other viruses.	China			
13	12	Bat-community Interactions (including livestock)	**Regional risk of a bat-pig outbreak**	Identify areas with swine-bat overlaps similar to SADS conditions	Bangladesh, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, India, Malaysia, Myanmar, Senegal, Sierra Leone, Tanzania, Uganda, Viet Nam	Similarity Analysis; ecological niche modeling?	Areas for increased surveillance and bat-livestock separation based on previous Nipah work	
14	13	Bat guano farming/harvesting	**Bat-harvester interaction**	Survey caves to estimate harvester populations and practices. Estimate reduction in risk with reduced or modified practices.	Cambodia, DRC, Myanmar, Thailand, Vietnam	Scenario Creation	Target caves/guano farms and safety measures by cave/guano farms	
15	14	Bat guano farming/harvesting	**Bat guano farming**	Determine viral survival associated with guano preparation practices	Cambodia, DRC, Myanmar, Thailand, Vietnam, Indonesia, CIV, ROC, Rwanda	Scenario Creation	Time frames and practices for guano preparation	PREDICT-1 and PREDICT-2 site data about guano harvesting, PREDICT-1 viral detections at that interface
16	15	Shared food resources	**Fruit bat-livestock-orchard overlap**	Identify areas most likely to have human-fruit-bat interactions using species ranges and agricultural data	Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Malaysia, Myanmar, RoC, Rwanda, Sierra Leone, Tanzania, Uganda, India, Senegal, Nepal, Jordan	Similarity Analysis	Areas for increased surveillance and bat-livestock separation based on previous Nipah work	

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10		Estimates of efficacy of safety measures from published literature	Data on visitor flow, demographics and origin. Data on current safety measures implemented Observation on tourist-bat interaction measures	Long		ID target caves and generate a sampling plan	Stephanie Martinez	Karen Saylors, LVF, PD, Kirsten (Uganda), DJW (Tanzania)
11	High-resolution data of SADS disease mortality	Vaccination and other intervention efficacy based of PEDV		Med		Currently underway	Noam Ross	Cale Basaraba, China collaborators
12			Infrared and echolocation detection of bats on farms.	Med		Experimental design meeting follow-up	Hongying	Guangjian, other China collaborators
13	IUCN species ranges, FAO livestock layers	Bat-swine separation policy procedures based on Nipah work		Short		Determine characteristics of SADS-CoV spillover locations	Shirley Chen	Carlos, Erica
14		Estimates of efficacy of safety measures from published literature	Data on harvester numbers, frequency and duration of visits, harvets and safety practices, current safety measurements in place.	Long		ID target caves/guano farms and generate a sampling plan	Shirley Chen	Karen Saylors, Suzan Murray, KJO, Tracey, Lucy
15	Viral survival lit review		Experimental viral survival in bat feces (UCD lab)	Long			Tracey Goldstein	Simon, Peter, KJO,
16	IUCN species ranges, FAO livestock layers, FAO and associated crop/orchard layers, population density maps; ; Na's work; Richard Suu-ire's project in Ghana	Literature or country-level descriptions to determine specific types of fruit tree resources: map layers are general for tropical fruit		Short-med		Determine characteristics of spillover locations to drive similarity analysis, data availability review	Shirley Chen	Carlos, Erica, Nistara (DTRA-funded work identifying orchards from Satellite), JAKM (Cashews), DJW,Terra and Brian B

	Q
10	We have Murongo cave as well in TZ; Rwanda won't approve the IRB
11	
12	
13	DJW and Ian if behavior/social related?;Terra & Richard data from Ghana; Consider in-country people
14	
15	Tracey to next assess availability of suitable virus isolate for experiment
16	Discuss in-country peopole

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17	16	Shared food resources	**Bat-palm sap overlap**	Identify areas where bat populations and viral propensities overlap with palm sap harvesting practices	Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Malaysia, Myanmar, RoC, Rwanda, Sierra Leone, Tanzania, Uganda, India, Senegal	Similarity Analysis	Areas for palm sap safety interventions	

	I	J	K	L	M	N	O	P
17	IUCN species ranges, HP3 and known viruses hosted by bat species	Literature or country-level descriptions to determine specific types of fruit tree resources: map layers are general for tropical fruit		Med		Determine whether palm sap harvesting practices data are likely to be adequate	Shirley Chen	JHE, KJO

	Q
17	Consider which countries are really harvesting sap & then build team

	A	B	C	D	E	F	G
1	**Topic**	**Project Name**	**Description**	**Potential Countries**	**Analysis Type**	**Expected Policy Products or Recommendations**	**Existing PREDICT Data**
2	Shared food resources	**Fruit bat-livestock-orchard overlap**	Identify areas most likely to have human-fruit-bat interactions using species ranges and agricultural data	Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Malaysia, Myanmar, RoC, Rwanda, Sierra Leone, Tanzania, Uganda	Similarity Analysis	Areas for increased surveillance and bat-livestock separation based on previous Nipah work	
3	Medium and large market value chains	**Converting live markets to non-live**	Estimating reductions in viral density/diversity as a result of change from live to non-live markets. Compare estimated viral diversity and density in a live market to an equivalent non-live market or live market with fraction of time, volume, or species converted to non-live.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Mixed Data Modeling/Scenario Creation	Expected degree of risk change from full conversion of markets, Expected efficacy of partial conversions and closures Identification of markets with potential for conversion	PREDICT-1 viral detection data from live and non-live samples in markets
4	Medium and large market value chains	**Upstream vs. local viral diversity**	Compare viral detection rates of species in markets to the same species at their sources	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Data Modeling	Recommendations whether to focus on upstream or in-market interventions to reduce spillover	PREDICT-1 viral detection data
5	Bat-community Interactions (including livestock)	**Regional risk of a bat-pig outbreak**	Identify areas with swine-bat overlaps similar to SADS conditions	Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Malaysia, Myanmar, RoC, Rwanda, Sierra Leone, Tanzania, Uganda	Similarity Analysis; ecological niche modeling?	Areas for increased surveillance and bat-livestock separation based on previous Nipah work	
6	Bat Hunting and hunted meat value chain	**Hunter Behavioral Risk Hotspots**	Identify areas with highest risk of viral spillover to hunters based on risky behavior, propensity of local bat species to carry viruses, and likelihood for bats to be sold into value chain	Bangladesh, China, DRC, Ghana, Indonesia, Nepal, RoC, Sierra Leone	Data Modeling	Target locations and behaviors for educational interventions	PREDICT-2 questionaire data on hunter behavior
7	Bat Hunting and hunted meat value chain	**Bat Hunting Seasonality**	Identify areas of bat hunting associated with high risk seasonality in bat viral detection	Bangladesh, China, DRC, Ghana, Indonesia, Nepal, RoC, Sierra Leone	Data modeling	Target locations and seasons to reduce bat hunting/drive education	PREDICT-2 questionaire data on hunter behavior PREDICT-1 viral detections

	H	I	J	K	L	M	N	O
1	**Other Existing Data Assets**	**Non-field Data Collection**	**Additional Field Data Collection**	**Time Frame (3 mo, 6 mo, 1 yr)**	**Probability of Success (Low, Med High)**	**Action items**	**Point person**	**Collaborators**
2	IUCN species ranges, FAO livestock layers, FAO and associated crop/orchard layers, population density maps; ; Na's work; Richard Suu-ire's project in Ghana	Literature or country-level descriptions to determine specific types of fruit tree resources: map layers are general for tropical fruit		Short-med		Determine characteristics of spillover locations to drive similarity analysis, data availability review	Brooke Watson	Carlos, Erica, Nistara (DTRA-funded work identifying orchards from Satellite), JAKM (Cashews)
3		Literature review of viral survival at EHA (collected but not analyzed)		Short		Determine which countries are we sampling from dead animals in non-live markets. Can we identify comparable live and non-live markets?	CKJ	
4			Market-upstream site associations from field teams	Short		Determine what P1 cases have same species in both markets and linked upstream sources	Kevin	Evan, CKJ
5	IUCN species ranges, FAO livestock layers	Bat-swine separation policy procedures based on Nipah work		Short		Determine characteristics of SADS-CoV spillover locations	Brooke Watson	Carlos, Erica
6	IUCN species ranges, HP3 viral risk propensities		Country team estimation of exact bat species being hunted	Med		Pull survey data to determine locations with hunters, what species hunted and hunting behaviors engaged in	CKJ	KJO, Anna Willoughby
7	IUCN species ranges		Country team estimation of exact bat species being hunted	Med		Pull survey data to determine locations with hunters, what species hunted and hunting behaviors engaged in, determine whether these hunters hunt with Pteropus or Eidelon (seasonal bat species)	CKJ	KJO, Evan, Nistara, Diego,PD, JAKM

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8	Shared food resources	**Bat-palm sap overlap**	Identify areas where bat populations and viral propensities overlap with palm sap harvesting practices	Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Malaysia, Myanmar, RoC, Rwanda, Sierra Leone, Tanzania, Uganda	Similarity Analysis	Areas for palm sap safety interventions	
9	Bat-community Interactions (including livestock)	**SADS outbreak modeling - China**	Developing and fitting model of SADS disease dynamics on chinese pig farms based on previous outbreak data	China	Scenario Creation	Recommendations for intervention in new SADS outbreaks	PREDICT-2 virus identification
10	Bat-community Interactions (including livestock)	**Bat-pig contact risk of new EIDs**	Identifying the likely mechanism for contact between SADS host bats and pigs to assess if this could be generalizable to other countries and other viruses.	China			
11	Medium and large market value chains	**Reducing market biodiversity**	Estimating potential for viral recombination in markets based on species diversity and count using previously created recombination model.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Mixed Data Modeling/Scenario Creation	Identification and ranking of markets with high recombination risk, recommendations for species segregation for those markets	PREDICT-2 Species and number of animals (live) in markets (Site and Event characterization - Main Q15)
12	Medium and large market value chains	**Assessing viral sharing within market species**	Within common or nearby markets, determining which species share viruses in order to recommend separation. Determine viral sharing both within specific markets, and for all PREDICT-1 (and other) data for species found in the same market	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Data Modeling	Recommendations for species segregation to reduce spread,	PREDICT-1 viral detection data from markets PREDICT-1 and PREDICT-2 species presence in markets
13	Medium and large market value chains	**Will policies for market-based interventions be accepted?**	The intevention policy ideas that we are generating above, and others, may not be acceptable to governments or people within countries. This project will assess their likelihood of becoming government policy, or being adopted by people.	Cameroon, China, DRC, Indonesia, Lao PDR, ROC, Vietnam	Mixed Data Modeling	Recommendations that are more likely to be adopted	PREDICT-1 and PREDICT-2 behavioral risk data
14	Ecotourism/recreational/religious exposure to bat caves	**Bat cave biodiversity risk**	Estimating potential for recombination of viruses in bat-dwelling caves	China, Malaysia, Myanmar, Rwanda, Uganda	Mixed Data Modeling/Scenario Creation	Risk characterization by cave site/size/type	
15	Ecotourism/recreational/religious exposure to bat caves	**Bat-tourist interaction**	Survey bat caves associated with predict to estimate tourist flow and demographics, current safety measures, contact risk. Estimate reduction of risk with limitation on visitors / safety measures.	China, Malaysia, Myanmar, Rwanda, Uganda	Scenario Creation	Target caves and safety measures by cave	
16	Bat guano farming/harvesting	**Bat-harvester interaction**	Survey caves to estimate harvester populations and practices. Estimate reduction in risk with reduced or modified practices.	Cambodia, DRC, Myanmar, Thailand, Vietnam	Scenario Creation	Target caves and safety measures by cave	

	H	I	J	K	L	M	N	O
8	IUCN species ranges, HP3 and known viruses hosted by bat species	Literature or country-level descriptions to determine specific types of fruit tree resources: map layers are general for tropical fruit		Med		Determine whether palm sap harvesting practices data are likely to be adequate	JHE	
9	High-resolution data of SADS disease mortality	Vaccination and other intervention efficacy based of PEDV		Med		Currently underway	Noam Ross, Cale Basaraba	
10			Infrared and echolocation detection of bats on farms.	Med		Experimental design meeting follow-up	Hongying, Guangjian, other analytical people	
11			More accurate species characterization and counts in identified markets of interest	Long		Estimate data on species diversity and numbers from P2 site characterizations in market modules	CKJ	KJO, Sarah Olson
12	HP3 viral associations		More accurate species characterization and counts in identified markets of interest	Long		Estimate data on species diversity and numbers from P2 site characterizations in market modules	CKJ	KJO, Alice Latinne
13	Surveys of current policies within country, literature review		Targeted qualitative data and focus groups. Interviews with Govt. agencies.	Long			LVF, Saba Qasmieh	Karen Saylors, Hongying Li
14	HP3 and Cave bat viral sharing analysis	Find literature-based bat-specific viral sharing/recombination rates	Cave bat species diversity and composition and multiple cave sites	Long		Identify cave sites with potential for measurement and develop sampling plan	KJO	Anna Willoughby
15		Estimates of efficacy of safety measures from published literature	Data on visitor flow, demographics and origin. Data on current safety measures implemented Observation on tourist-bat interaction measures	Long		ID target caves and generate a sampling plan	LVF	Karen Saylors, Stephanie Martinez
16		Estimates of efficacy of safety measures from published literature	Data on harvester numbers, frequency and duration of visits, harvets and safety practices, current safety measurements in place.	Long		ID target caves and generate a sampling plan	LVF	Karen Saylors, Suzan Murray

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17	Bat guano farming/harvesting	**Bat guano farming**	Determine viral survival associated with guano preparation practices	Cambodia, DRC, Myanmar, Thailand, Vietnam	Scenario Creation	Time frames and practices for guano preparation	PREDICT-1 and PREDICT-2 site data about guano harvesting, PREDICT-1 viral detections at that interface

	H	I	J	K	L	M	N	O
17	Viral survival lit review		Experimental viral survival in bat feces (UCD lab)	Long			Tracey, Jonna	Simon, Peter, Kevin,